Richard Martin Groundwater LLC

Richard J. Martin, LHG

EDUCATION

Graduate Studies, Hydrogeology, Wright State University
BS, Geology, Wright State University, 1989

REGISTRATION

Licensed Hydrogeologist: WA, 337, 2002

PROFESSIONAL SUMMARY

With over 23 years of experience as a hydrogeologist, Richard has been involved with all aspects of hydrogeologic studies, including evaluation of groundwater resources, design and implementation of aquifer testing, delineation of wellhead protection zones, assessment of groundwater/surface water interactions, evaluation of soil and groundwater remedial systems, and determination of historical contaminant plume movement. He also provides hydrogeologic support for geotechnical projects including development of construction dewatering plans, evaluation of groundwater seepage for slope stability problems, evaluation of soil infiltration capacity for stormwater control design, and estimation of groundwater inflows to tunnels and excavations.

PROJECT EXPERIENCE

Seattle Public Utilities, Greenwood Groundwater Study, Seattle, WA. Richard was Project Hydrogeologist for a study of soil and groundwater conditions in the Greenwood area of Seattle, Washington. A portion of the Greenwood area is underlain by peat and soft soils, and as a result of loading of these soils and declines in groundwater levels, ground settlement has occurred, which has damaged buildings and infrastructure in the area. Richard evaluated the groundwater conditions and determined that both short-term and long-term declines in water levels from drainage of the area, groundwater losses to the storm drain system, reduced infiltration, and construction dewatering have contributed to the settlement. Richard provided recommendations to help limit future settlement including limitations on drawdown as a result of dewatering during future development, and completing a groundwater monitoring program to establish baseline conditions by which future declines can be identified. As part of the overall evaluation of the hydrogeologic system, Richard completed a preliminary evaluation of the relationship of groundwater input to Piper's Creek from the Greenwood area.

Anchorage Fish Hatchery, Anchorage, AK. Richard was Project Hydrogeologist to evaluate the effects of proposed groundwater pumping at the Anchorage Fish Hatchery site on local groundwater resources. The project is part of an ongoing study being conducted for expansion of the hatchery, and provides a basis for future groundwater resource planning and support for securing a water right. Richard constructed a three-dimensional groundwater flow model of the Anchorage area to evaluate the impact of the hatchery wells on existing groundwater users in the area. His groundwater modeling results indicate that up to 3,000 gpm is available at the hatchery site from the deep aquifer and pumping will have localized drawdown effects on groundwater levels but relatively small basin-wide drawdown effects. Richard's analysis indicates the proposed pumping rates appear to be sustainable for the long term (up to 50 years) if the assumed current groundwater conditions remain unchanged. Richard also used the

groundwater model to evaluate the potential for mobilization of contaminants toward the hatchery wells and the potential for salt water intrusion as a result of the additional pumping at the hatchery.

Review of Critical Aquifer Recharge Areas Ordinance, Snohomish County, WA. Richard was Project Hydrogeologist to assist the Snohomish County Planning Department in reviewing proposed Critical Aquifer Recharge Areas (CARAs) ordinance for the county. CARAs are geographic areas that are primary sources of recharge to aquifers that provide potable drinking water supplies. The ordinance is designed to protect CARAs by managing development and land use activities in those areas. Richard reviewed numerous consultant reports that provided the basis for developing the ordinance to determine if they met the definition of Best Available Science. He attended several Planning Commission and public comment meetings to respond to technical groundwater questions at the meetings, prepared written responses to public questions and comments about the proposed ordinance, and prepared a brief report summarizing his opinions and recommendations.

Caribbean Utilities Company (CUC), Simulated Groundwater Flow and Heat Transport, Grand Cayman Island. CUC uses diesel engines for power generation and groundwater is used as a coolant for the engines. The preferred means of disposing of the spent cooling water is by reinjection into the underlying karst aquifer system. Richard developed models for the project using MODFLOW for the groundwater flow portion of the model while MT3D was used to simulate heat transport. He used the models for design of the original well field and calibrated the model to field conditions after initiation of the well field. The model was used to assess potential impacts of injection of the heated water on the local aquifer system. The model indicates that local groundwater temperatures may increase as a result of reinjection of the heated water, however, the impacts would be of limited areal extent and would not affect other groundwater users in the area.

Seattle Public Utilities, Cedar Sockeye Hatchery, Landsburg, WA. Richard was Project Hydrogeologist to evaluate potential sources of water for a new fish hatchery along the Cedar River. Sources evaluated included shallow groundwater, deep groundwater, and numerous springs near the site. A soil and groundwater study was completed to evaluate groundwater conditions associated with the springs. Additional activities were performed in support of the Environmental Impact Statement to determine the approximate discharge of the springs, assess potential disturbance to the sensitive spring areas as a result of development of the springs, and address water rights issue.

Fairbanks Memorial Hospital, Well Field Design, Fairbanks, AK. Richard was Project Hydrogeologist for this project to design a well system to cool generators for a hospital in Fairbanks, Alaska. The system was designed to pump groundwater from multiple production wells and reinject the heated water into the underlying aquifer. Richard reviewed regional and site-specific groundwater conditions to assess potential impacts to the aquifer as part of the permitting process. He provided well design specifications and addressed well performance concerns from iron precipitation. Richard oversaw the construction of a groundwater flow and thermal transport model to evaluate the potential for short-circuiting of heated water to the production well, limit the off-site migration of heated water, and assess potential impacts of the heated water on permafrost underlying the site.

KOMO-TV Emergency Supply Well, Seattle, Washington. Richard was Project Hydrogeologist to explore, design, and test an emergency supply well for the KOMO television station. The emergency supply well was necessary to cool backup generators in the event of a power outage. Initially, Richard evaluated potential locations and depth of the well based on regional groundwater data and information from nearby projects. During drilling for the well, Richard worked closely with the contractor to determine the depth to screen the well and the expected yield of a well based on drill action and soil type.

Following well development Richard, tested the test well and evaluated the data to provide the owner with well yield for design of the backup system.

Hydrogeologic Study, Conifer Ridge, WA. Modeled impacts to the Snoqualmie River from a proposed production well for a future golf course at Conifer Ridge. Calibrated model to steady-state water levels and specific capacity data from nearby well. Estimated vertical hydraulic head distribution in overlying aquitard, assessed travel time of pressure wave through the aquitard, and calculated rate of water released from storage from the aquitard to the overburden. Determined that pumping would have negligible impacts on the Snoqualmie River.

Hanford Reach, Well Field Design for Groundwater Source Heating and Cooling, Richland, WA. Richard was Project Manager for design and testing of a production/injection well system to support a groundwater source heating and cooling system for the proposed Hanford Reach Interpretative Center in Richland, Washington. The Interpretive Center will be an environmental education center for the last free flowing portion of the Columbia River and a key component of the project is development of an environmentally friendly, sustainable building. Richard worked with the architect to determine the number and location of wells based on installation and pumping of a test well at the site.

City of Seattle Water Department, Groundwater Study, Seattle, WA. Richard evaluated groundwater resources at the Highline Well Field as part of an aquifer storage and recovery (ASR) program. This project was one of the first ASR programs of its kind in the country. Richard completed computer simulations of groundwater flow using MODFLOW to assess impacts of artificial recharge on the aquifer during the winter months using excess surface water resources. The model was used to optimize pumping scenarios during summer peak period use to maximize capacity. His modeling indicated that the ASR program may not be able to increase production at the well field, however could maintain previously declining aquifer water levels at pre-production levels. Richard also delineated wellhead protection areas using particle-tracking methods for 1-, 5-, and 10-year travel times for the well field.

Cadman High Rock Sand and Gravel Quarry, Hydrogeologic Assessment, Monroe, WA. Performed a hydrogeologic assessment at the Cadman quarry. After an aquifer blowout in the quarry, evaluated water flow from the newly formed spring and assessed the spring/aquifer relationship. Evaluated impacts of aquifer dewatering on private well supplies around quarry. Supervised drilling, installation, and testing of a new production well to supply water to homeowners whose wells had gone dry after blowout. Assessed potential for future soil instability.